==========
Sequence Listing was accepted.
If you need help call the Patent Electronic Business Center at (866) 217-9197 (toll free).
Reviewer: Keisha Douglas
Timestamp: [year=2008; month=2; day=28; hr=18; min=4; sec=39; ms=79;]
==========

Validated By CRFValidator v 1.0.3

Application No: 10826324 Version No: 2.0

Input Set:

Output Set:

Started:	2008-02-14 16:57:42.989
Finished:	2008-02-14 16:57:44.595
Elapsed:	0 hr(s) 0 min(s) 1 sec(s) 606 ms
Total Warnings:	0
Total Errors:	0
No. of SeqIDs Defined:	42
Actual SeqID Count:	42

SUBSTITUTE SEQUENCE LISTING

<110> Weintraub, Bruce D.
Szkudlinski, Mariusz W.

<120> Cystine Knot Growth Factor Mutants

<130> TROP-007/03US

<140> 10826324
<141> 2004-04-19

<150> US 09/813,398
<151> 2001-03-20

<150> PCT/US99/05908
<151> 1999-03-19

<150> PCT/US98/19772
<151> 1998-09-22

<160> 42

<170> PatentIn version 3.4

<210> 1
<211> 93
<212> PRT
<213> Homo sapiens

<400> 1

```
Pro Ala Pro Asp Val Gln Asp Cys Pro Glu Cys Thr Leu Gln Glu Asn
1               5                  10                  15


Pro Phe Phe Ser Gln Pro Gly Ala Pro Ile Leu Gln Cys Met Gly Cys
            20                  25                  30


Cys Phe Ser Arg Ala Tyr Pro Thr Pro Leu Arg Ser Lys Lys Thr Met
        35                  40                  45


Leu Val Gln Lys Asn Val Thr Ser Glu Ser Thr Cys Cys Val Ala Lys
    50                  55                  60


Ser Tyr Asn Arg Val Thr Val Met Gly Gly Phe Lys Val Glu Asn His
65                  70                  75                  80


Thr Ala Cys His Cys Ser Thr Cys Tyr Tyr His Lys Ser
                85                  90
```

<210> 2
<211> 119
<212> PRT
<213> Homo sapiens

<400> 2

```
Pro Phe Cys Ile Pro Thr Glu Tyr Thr Met His Ile Glu Arg Arg Glu
1               5                   10                  15


Cys Ala Tyr Cys Leu Thr Ile Asn Thr Thr Ile Cys Ala Gly Tyr Cys
            20                  25                  30


Met Thr Arg Asp Ile Asn Gly Lys Leu Phe Leu Pro Lys Tyr Ala Leu
        35                  40                  45


Ser Gln Asp Val Cys Thr Tyr Arg Asp Phe Ile Tyr Arg Thr Val Glu
    50                  55                  60


Ile Pro Gly Cys Pro Leu His Val Ala Pro Tyr Phe Ser Tyr Pro Val
65                  70                  75                  80


Ala Leu Ser Cys Lys Cys Gly Lys Cys Asn Thr Asp Tyr Ser Asp Cys
                85                  90                  95


Ile His Glu Ala Ile Lys Thr Asn Tyr Cys Thr Lys Pro Gln Lys Ser
            100                 105                 110


Tyr Leu Val Gly Phe Ser Val
        115
```

<210> 3
<211> 140
<212> PRT
<213> Homo sapiens

<400> 3

```
Ser Lys Glu Pro Leu Arg Pro Arg Cys Arg Pro Ile Asn Ala Thr Leu
1               5                   10                  15


Ala Val Glu Lys Glu Gly Cys Pro Val Cys Ile Thr Val Asn Thr Thr
            20                  25                  30


Ile Cys Ala Gly Tyr Cys Pro Thr Met Thr Arg Val Leu Gln Gly Val
        35                  40                  45
```

```
Leu Pro Ala Leu Pro Gln Val Val Cys Asn Tyr Arg Asp Val Arg Phe
    50                  55                  60

Glu Ser Ile Arg Leu Pro Gly Cys Pro Arg Gly Val Asn Pro Val Val
65                  70                  75                  80

Ser Tyr Ala Val Ala Leu Ser Cys Gln Cys Ala Leu Cys Arg Arg Ser
                85                  90                  95

Thr Thr Asp Cys Gly Gly Pro Lys Asp His Pro Leu Thr Cys Asp Asp
            100                 105                 110

Pro Arg Phe Gln Asp Ser Ser Ser Ser Lys Ala Pro Pro Pro Ser Leu
        115                 120                 125

Pro Ser Pro Ser Arg Leu Pro Gly Pro Ser Asp Thr
    130                 135                 140
```

<210> 4
<211> 122
<212> PRT
<213> Homo sapiens

<400> 4

```
Pro Ser Arg Glu Pro Leu Arg Pro Trp Cys His Pro Ile Asn Ala Ile
1               5                   10                  15

Leu Ala Val Glu Lys Glu Gly Cys Pro Val Cys Ile Thr Val Asn Thr
            20                  25                  30

Thr Ile Cys Ala Gly Tyr Cys Pro Thr Met Met Arg Val Leu Gln Ala
        35                  40                  45

Val Leu Pro Pro Leu Pro Gln Val Val Cys Thr Tyr Arg Asp Val Arg
    50                  55                  60

Phe Glu Ser Ile Arg Leu Pro Gly Cys Pro Arg Gly Val Asp Pro Val
65                  70                  75                  80

Val Ser Phe Pro Val Ala Leu Ser Cys Arg Cys Gly Pro Cys Arg Arg
                85                  90                  95

Ser Thr Ser Asp Cys Gly Gly Pro Lys Asp His Pro Leu Thr Cys Asp
```

```
            100                 105                 110


His Pro Gln Leu Ser Gly Leu Leu Phe Leu
        115                 120


<210>  5
<211>  110
<212>  PRT
<213>  Homo sapiens

<400>  5

Pro Asn Ser Cys Glu Leu Thr Asn Ile Thr Ile Ala Ile Glu Lys Glu
1               5                   10                  15


Glu Cys Arg Phe Cys Ile Ser Ile Asn Thr Thr Trp Cys Ala Gly Tyr
            20                  25                  30


Cys Tyr Thr Arg Asp Leu Val Tyr Lys Asp Pro Ala Arg Pro Lys Ile
        35                  40                  45


Thr Cys Thr Phe Lys Glu Leu Val Tyr Glu Thr Val Arg Val Pro Gly
    50                  55                  60


Cys Ala His His Ala Asp Ser Leu Tyr Thr Tyr Pro Val Ala Thr Gln
65                  70                  75                  80


Cys His Cys Gly Lys Cys Asp Ser Asp Ser Thr Asp Cys Thr Val Arg
                85                  90                  95


Gly Leu Gly Pro Ser Tyr Cys Ser Phe Gly Glu Met Lys Glu
            100                 105                 110


<210>  6
<211>  126
<212>  PRT
<213>  Homo sapiens

<400>  6

Pro Ser Ile Glu Glu Ala Val Pro Ala Val Cys Lys Thr Arg Thr Val
1               5                   10                  15


Ile Tyr Glu Ile Pro Arg Ser Gln Val Asp Pro Thr Ser Ala Asn Phe
            20                  25                  30
```

```
Leu Ile Trp Pro Pro Cys Val Glu Val Lys Arg Cys Thr Gly Cys Cys
        35                  40                  45

Asn Thr Ser Ser Val Lys Cys Gln Pro Ser Arg Val His His Arg Ser
    50                  55                  60

Val Lys Val Ala Lys Val Glu Tyr Val Arg Lys Lys Pro Lys Leu Lys
65                  70                  75                  80

Glu Val Gln Val Arg Leu Glu Glu His Leu Glu Cys Ala Cys Ala Thr
                85                  90                  95

Thr Ser Leu Asn Pro Asp Tyr Arg Glu Glu Asp Thr Gly Arg Pro Arg
            100                 105                 110

Glu Ser Gly Lys Lys Arg Lys Arg Lys Arg Leu Lys Pro Thr
        115                 120                 125
```

<210> 7
<211> 161
<212> PRT
<213> Homo sapiens

<400> 7

```
Pro Ser Leu Gly Ser Leu Thr Ile Ala Glu Pro Ala Met Ile Ala Glu
1               5                   10                  15

Cys Lys Thr Arg Thr Glu Val Phe Glu Ile Ser Arg Arg Leu Ile Asp
            20                  25                  30

Arg Thr Asn Ala Asn Phe Leu Val Trp Pro Pro Cys Val Glu Val Gln
        35                  40                  45

Arg Cys Ser Gly Cys Cys Asn Asn Arg Asn Val Gln Cys Arg Pro Thr
    50                  55                  60

Gln Val Gln Leu Arg Pro Val Gln Val Arg Lys Ile Glu Ile Val Arg
65                  70                  75                  80

Lys Lys Pro Ile Phe Lys Lys Ala Thr Val Thr Leu Glu Asp His Leu
                85                  90                  95

Ala Cys Lys Cys Glu Thr Val Ala Ala Ala Arg Pro Val Thr Arg Ser
            100                 105                 110
```

```
Pro Gly Gly Ser Gln Glu Gln Arg Ala Lys Thr Pro Gln Thr Arg Val
        115                 120                 125

Thr Ile Arg Thr Val Arg Val Arg Arg Pro Pro Lys Gly Lys His Arg
    130                 135                 140

Lys Phe Lys His Thr His Asp Lys Thr Ala Leu Lys Glu Thr Leu Gly
145                 150                 155                 160

Ala
```

<210> 8
<211> 190
<212> PRT
<213> Homo sapiens

<400> 8

```
Pro Ala Pro Met Ala Glu Gly Gly Gly Gln Asn His His Glu Val Val
1               5                   10                  15

Lys Phe Met Asp Val Tyr Gln Arg Ser Tyr Cys His Pro Ile Glu Thr
            20                  25                  30

Leu Val Asp Ile Phe Gln Glu Tyr Pro Asp Glu Ile Glu Tyr Ile Phe
        35                  40                  45

Lys Pro Ser Cys Val Pro Leu Met Arg Cys Gly Gly Cys Cys Asn Asp
    50                  55                  60

Glu Gly Leu Glu Cys Val Pro Thr Glu Glu Ser Asn Ile Thr Met Gln
65                  70                  75                  80

Ile Met Arg Ile Lys Pro His Gln Gly Gln His Ile Gly Glu Met Ser
                85                  90                  95

Phe Leu Gln His Asn Lys Cys Glu Cys Arg Pro Lys Lys Asp Arg Ala
            100                 105                 110

Arg Gln Glu Lys Lys Ser Val Arg Gly Lys Gly Lys Gly Gln Lys Arg
        115                 120                 125
```

```
Lys Arg Lys Lys Ser Arg Tyr Lys Ser Trp Ser Val Pro Cys Gly Pro
    130                 135                 140

Cys Ser Glu Arg Arg Lys His Leu Phe Val Gln Asp Pro Gln Thr Cys
145                 150                 155                 160

Lys Cys Ser Cys Lys Asn Thr Asp Ser Arg Cys Lys Ala Arg Gln Leu
                165                 170                 175

Glu Leu Asn Glu Arg Thr Cys Arg Cys Asp Lys Pro Arg Arg
            180                 185                 190
```

<210> 9
<211> 121
<212> PRT
<213> Homo sapiens

<400> 9

```
Pro Ser Ser Ser His Pro Ile Phe His Arg Gly Glu Phe Ser Val Cys
1               5                   10                  15

Asp Ser Val Ser Val Trp Val Gly Asp Lys Thr Thr Ala Thr Asp Ile
            20                  25                  30

Lys Gly Lys Glu Val Met Val Leu Gly Glu Val Asn Asn Ile Asn Ser
        35                  40                  45

Val Phe Lys Gln Tyr Phe Phe Glu Thr Lys Cys Arg Asp Pro Asn Pro
    50                  55                  60

Val Asp Ser Gly Cys Arg Gly Ile Asp Ser Lys His Trp Asn Ser Tyr
65                  70                  75                  80

Cys Thr Thr Thr His Thr Phe Val Lys Ala Met Leu Thr Asp Gly Lys
                85                  90                  95

Gln Ala Ala Trp Arg Phe Ile Arg Ile Asp Thr Ala Cys Val Cys Val
            100                 105                 110

Leu Ser Arg Lys Ala Val Arg Arg Ala
        115                 120
```

<210> 10
<211> 120

<212> PRT
<213> Homo sapiens

<400> 10

Pro His Ser Asp Pro Ala Arg Arg Gly Glu Leu Ser Val Cys Asp Ser
1 5 10 15

Ile Ser Glu Trp Val Thr Ala Ala Asp Lys Lys Thr Ala Val Asp Met
20 25 30

Ser Gly Gly Thr Val Thr Val Leu Glu Lys Val Ser Pro Val Lys Gly
35 40 45

Gln Leu Lys Gln Tyr Phe Tyr Glu Thr Lys Cys Asn Pro Met Gly Tyr
50 55 60

Thr Lys Glu Gly Cys Arg Gly Ile Asp Lys Arg His Trp Asn Ser Gln
65 70 75 80

Cys Arg Thr Thr Gln Ser Tyr Val Arg Ala Met Leu Thr Asp Ser Lys
85 90 95

Lys Arg Ile Gly Trp Arg Phe Ile Arg Ile Asp Thr Ser Cys Val Cys
100 105 110

Ile Leu Thr Ile Lys Arg Gly Arg
115 120

<210> 11
<211> 120
<212> PRT
<213> Homo sapiens

<400> 11

Pro Tyr Ala Glu His Lys Ser His Arg Gly Glu Tyr Ser Val Cys Asp
1 5 10 15

Ser Glu Ser Leu Trp Val Thr Asp Lys Ser Ser Ala Ile Asp Ile Arg
20 25 30

Gly His Gln Val Thr Val Leu Gly Glu Ile Gly Lys Thr Asn Ser Pro
35 40 45

Val Lys Gln Tyr Phe Tyr Glu Thr Arg Cys Lys Glu Ala Arg Pro Val

```
    50                  55                  60

Lys Asn Gly Cys Arg Gly Ile Asp Asp Arg His Trp Asn Ser Gln Cys
65                  70                  75                  80

Lys Thr Ser Gln Thr Tyr Val Arg Ala Ser Leu Thr Glu Asn Asn Lys
                85                  90                  95

Leu Val Gly Trp Arg Trp Ile Arg Ile Asp Thr Ser Cys Val Cys Ala
            100                 105                 110

Leu Ser Arg Lys Ile Gly Arg Thr
        115                 120
```

<210> 12
<211> 131
<212> PRT
<213> Homo sapiens

<400> 12

```
Pro Gly Val Ser Glu Thr Ala Pro Ala Ser Arg Arg Gly Glu Leu Ala
1               5                   10                  15

Val Cys Asp Ala Val Ser Gly Trp Val Thr Asp Arg Arg Thr Ala Val
            20                  25                  30

Asp Leu Arg Gly Arg Glu Val Glu Val Leu Gly Glu Val Pro Ala Ala
        35                  40                  45

Gly Gly Ser Pro Leu Arg Gln Tyr Phe Phe Glu Thr Arg Cys Lys Ala
    50                  55                  60

Asp Asn Ala Glu Glu Gly Gly Pro Gly Ala Gly Gly Gly Gly Cys Arg
65                  70                  75                  80

Gly Val Asp Arg Arg His Trp Val Ser Glu Cys Lys Ala Lys Gln Ser
                85                  90                  95

Tyr Val Arg Ala Leu Thr Ala Asp Ala Gln Gly Arg Val Gly Trp Arg
            100                 105                 110

Trp Ile Arg Ile Asp Thr Ala Cys Val Cys Thr Leu Leu Ser Arg Thr
        115                 120                 125
```

Gly Arg Ala
    130

<210> 13
<211> 113
<212> PRT
<213> Homo sapiens

<400> 13

Pro Ala Leu Asp Thr Asn Tyr Cys Phe Ser Ser Thr Glu Lys Asn Cys
1   5   10   15

Cys Val Arg Gln Leu Tyr Ile Asp Phe Arg Lys Asp Leu Gly Trp Lys
            20   25   30

Trp Ile His Glu Pro Lys Gly Tyr His Ala Asn Phe Cys Leu Gly Pro
        35   40   45

Cys Pro Tyr Ile Trp Ser Leu Asp Thr Gln Tyr Ser Lys Val Leu Ala
    50   55   60

Leu Tyr Asn Gln His Asn Pro Gly Ala Ser Ala Ala Pro Cys Cys Val
65   70   75   80

Pro Gln Ala Leu Glu Pro Leu Pro Ile Val Tyr Tyr Val Gly Arg Lys
                85   90   95

Pro Lys Val Glu Gln Leu Ser Asn Met Ile Val Arg Ser Cys Lys Cys
            100   105   110

Ser

<210> 14
<211> 113
<212> PRT
<213> Homo sapiens

<400> 14

Pro Ala Leu Asp Ala Ala Tyr Cys Phe Arg Asn Val Gln Asp Asn Cys
1   5   10   15

Cys Leu Arg Pro Leu Tyr Ile Asp Phe Lys Arg Asp Leu Gly Trp Lys
            20   25   30

```
Trp Ile His Glu Pro Lys Gly Tyr Asn Ala Asn Phe Cys Ala Gly Ala
        35                  40                  45

Cys Pro Tyr Leu Trp Ser Ser Asp Thr Gln His Ser Arg Val Leu Ser
    50                  55                  60

Leu Tyr Asn Thr Ile Asn Pro Glu Ala Ser Ala Ser Pro Cys Cys Val
65                  70                  75                  80

Ser Gln Asp Leu Glu Pro Leu Thr Ile Leu Tyr Tyr Ile Gly Lys Thr
                85                  90                  95

Pro Lys Ile Glu Gln Leu Ser Asn Met Ile Val Lys Ser Cys Lys Cys
            100                 105                 110

Ser
```

<210> 15
<211> 113
<212> PRT
<213> Homo sapiens

<400> 15

```
Pro Ala Leu Asp Thr Asn Tyr Cys Phe Arg Asn Leu Glu Glu Asn Cys
1               5                   10                  15

Cys Val Arg Pro Leu Tyr Ile Asp Phe Arg Gln Asp Leu Gly Trp Lys
            20                  25                  30

Trp Val His Glu Pro Lys Gly Tyr Tyr Ala Asn Phe Cys Ser Gly Pro
        35                  40                  45

Cys Pro Tyr Leu Arg Ser Ala Asp Thr Thr His Ser Thr Val Leu Gly
    50                  55                  60

Leu Tyr Asn Thr Leu Asn Pro Glu Ala Ser Ala Ser Pro Cys Cys Val
65                  70                  75                  80

Pro Gln Asp Leu Glu Pro Leu Thr Ile Leu Tyr Tyr Val Gly Arg Thr
                85                  90                  95
```

Pro Lys Val Glu Gln Leu Ser Asn Met Val Val Lys Ser Cys Lys Cys
100 105 110

Ser

<210> 16
<211> 371
<212> PRT
<213> Homo sapiens

<400> 16

Pro Met Trp Pro Leu Trp Leu Cys Trp Ala Leu Trp Val Leu Pro Leu
1 5 10 15

Ala Gly Pro